CLAIMS

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1. A herbicidal composition comprising:

(i) a metal chelate of a 2-(substituted benzoyl)-1,3-cyclohexanedione of formula (I)

$$(Q)p$$
 $(Z)n$ (I)

wherein X represents a halogen atom; a straight- or branched-chain alkyl or alkoxy group containing up to six carbon atoms which is optionally substituted by one or more groups $-OR^1$ or one or more halogen atoms; or a group selected from nitro, cyano, $-CO_2R^2$, $-S(O)_mR^1$, $-O(CH_2)_rOR^1$, $-COR^2$, $-NR^2R^3$, $-SO_2NR^2R^3$, $-CONR^2R^3$, $-CSNR^2R^3$ and $-OSO_2R_4$;

R¹ represents a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

R² and R³ each independently represents a hydrogen atom; or a straight- or branched-chain alkyl group containing up to six carbon atoms which is optionally substituted by one or more halogen atoms;

R⁴ represents a straight-or branched-chain alkyl, alkenyl or alkynyl group containing up to six carbon atoms optionally substituted by one or more halogen atoms; or a cycloalkyl group containing from three to six carbon atoms;

each Z independently represents halo, nitro, cyano, S(O)_mR⁵, OS(O)_mR⁵,

 (C_1-C_6) alkyl, (C_1-C_6) alkoxy, (C_1-C_6) haloalkyl, (C_1-C_6) haloalkoxy, carboxy,

 (C_1-C_6) alkylcarbonyloxy, (C_1-C_6) alkoxycarbonyl, (C_1-C_6) alkylcarbonyl, amino, (C_1-C_6) alkylamino, (C_1-C_6) dialkylamino having independently the stated number of carbon atoms in each alkyl group, (C_1-C_6) alkylcarbonylamino,

25 (C₁-C₆)alkoxycarbonylamino, (C₁-C₆)alkylaminocarbonylamino,

(C₁-C₆)dialkylaminocarbonylamino having independently the stated number of carbon atoms in each alkyl group, (C₁-C₆)alkoxycarbonyloxy,

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(C₁-C₆)alkylaminocarbonyloxy, (C₁-C₆)dialkylcarbonyloxy, phenylcarbonyl, substituted phenylcarbonyl, phenylcarbonyloxy, substituted phenylcarbonylamino, substituted phenylcarbonylamino, phenoxy or substituted phenoxy;

5 R⁵ represents cyano, -COR⁶, -CO₂R⁶ or -S(O)_mR⁷;

R⁶ represents hydrogen or straight- or branched-chain alkyl group containing up to six carbon atoms;

R⁷ represents (C₁-C₆)alkyl, (C₁-C₆)haloalkyl, (C₁-C₆)cyanoalkyl,

(C₃-C₈)cycloalkyl optionally substituted with halogen, cyano or (C₁-C₄)alkyl; or phenyl optionally substituted with one to three of the same or different halogen, nitro, cyano, (C₁-C₄)haloalkyl, (C₁-C₄)alkyl, (C₁-C₄)alkoxy or -S(O)_mR⁸;

R⁸ represents (C₁-C₄)alkyl;

each Q independently represents (C_1-C_4) alkyl or $-CO_2R^9$ wherein R^9 is (C_1-C_4) alkyl;

m is zero, one or two;

n is zero or an integer from one to four;

r is one, two or three; and

p is zero or an integer from one to six; and

- (ii) an organic phosphate, phosphonate or phosphinate adjuvant.
- 20 2. A herbicidal composition according to claim 1, wherein X is chloro, bromo, nitro, cyano, C₁-C₄ alkyl, -CF₃, -S(O)_mR¹, or -OR¹.
 - 3. A herbicidal composition according to any one or claims 1 or 2, wherein each Z is independently chloro, bromo, nitro, cyano, C₁-C₄ alkyl, -CF₃, -OR¹, -OS(O)_mR⁵ or -S(O)_mR⁵.
- 25 4. A herbicidal composition according to any one of claims 1 to 3, wherein n is one or two.
 - 5. A herbicidal composition according to any one of claims 1 to 4, wherein p is zero.

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- A herbicidal composition according to any one of claims 1 to 5, wherein the compound of formula (I) is selected from the group consisting of 2-(2'nitro-4'methylsulphonylbenzoyl)-1,3-cyclohexanedione, 2-(2'-nitro-4'-methylsulphonyloxy benzoyl)-1,3-cyclohexanedione, 2-(2'-chloro-4'-methylsulphonylbenzoyl)-1,3-cyclohexanedione, 4,4-dimethyl-2-(4-methanesulphonyl-2-nitrobenzoyl)-1,3-cyclohexanedione, 2-(2-chloro-3-ethoxy-4-methanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione and 2-(2-chloro-3-ethoxy-4-ethanesulphonylbenzoyl)-5-methyl-1,3-cyclohexanedione.
- 7. A herbicidal composition according to any one of claims 1 to 6, wherein the phosphate, phosphonate or phosphinate adjuvant is a compound of formula II

wherein R¹¹ is an alkoxy group containing from 4 to 20 carbon atoms or a group -[OCH₂CHR¹⁴]_t-OR¹⁵ wherein R¹⁴ is hydrogen, methyl or ethyl, t is from 0 to 50 and R¹⁵ is hydrogen or an alkyl group containing from 1 to 20 carbon atoms; and R¹² and R¹³ are independently (i) an alkyl or alkenyl group containing from 4 to 20 carbon atoms; (ii) optionally substituted phenyl; (iii) an alkoxy group containing from 4 to 20 carbon atoms or (iv) a group -[OCH₂CHR¹⁴]_t-OR¹⁵ as herein defined; or (v) a group of formula (III)

- wherein R¹⁶ is an alkoxy group containing from 4 to 20 carbon atoms or a group -[OCH₂CHR¹⁴]_t-OR¹⁵ as herein defined and R¹⁷ is an alkyl group containing from 4 to 20 carbon atoms, optionally substituted phenyl, an alkoxy group containing from 4 to 20 carbon atoms or a group -[OCH₂CHR¹⁴]_t-OR¹⁵ as herein defined; and wherein t is from 0 to ten.
- A herbicidal composition according to claim 7, wherein the compound of formula (II) is a phosphate in which R¹¹, R¹² and R¹³ are all independently alkoxy groups.

- 9. A herbicidal composition according to claim 7, wherein the compound of formula (II) is a phosphonate in which R¹¹ and R¹² are both independently alkoxy groups and R¹³ is an alkyl, alkenyl or optionally substituted phenyl group.
- 10. A herbicidal composition according to claim 7, wherein the compound of formula

 (II) is a phosphinate in which R¹¹ is an alkoxy group and R¹² and R¹³ are both independently an alkyl, alkenyl or optionally substituted phenyl group.
 - 11. A process for the control of weeds, said process comprising applying to the locus of the weeds a herbicidally effective amount of a composition as claimed in any one of claims 1 to 10.
- 10 12. A method of improving the selectivity of a metal chelate of a 2-(substituted benzoyl)-1,3-cyclohexanedione of formula (I) as defined in claim 1, when applied to unwanted vegetation in a crop of useful plants, said method comprising the applying of a herbicidally effective amount of a composition as claimed in any one of claims 1 to 10.